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# REPORT OF PINE BEETLE SURVEY OF THE KLAMATH INDIAN RESERVATION AND INCLUDED PRIVATE LANDS, OREGON

Seasons of 1942 and 1943

by

Ralph C. Hall

Forest Insect Laboratory
341 Giannini Hall, U. C.
Berkeley 4, California
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# REPORT OF PINE BEETLE SURVEY OF THE KLAMATH INDIAN RESERVATION AND INCLUDED PRIVATE LANDS, OREGON

Seasons of 1942 and 1943

Approved by:

F. P. Keen
Entomologist, in Charge

Submitted by:

Ralph C. Hall
Entomologist

Forest Insect Laboratory
341 Giannini Hall, U. C.
Berkeley 4, California
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## ABSTRACT

A. The 1942 Infestation (Complete Record)

1. Primary insect - Western pine beetle in ponderosa pine

2. Total pine timber killed on reporting area (Table 2)

| No. trees | Volume b.m. | Av. vol./acre | No. trees/sec. | % Stand |
|---|---|---|---|---|
| 28,770 | 14,865,000 | 21 | 26 | 0.34 |

3. Classification of the infestation - Low endemic

4. Trend of the infestation - Approximately the same as 1941

5. Size of average tree killed - 1,100 board feet

B. The 1943 Infestation (Incomplete Record)

1. Primary insect - Western pine beetle in ponderosa pine

2. Probable trend - Slightly higher than in 1942

3. Size of average tree killed - 1,300 board feet

4. Control work recommended - None

C. Miscellaneous Insects

1. Serious defoliation of range plants by the Great Basin Tent Caterpillar.

2. Serious defoliation of lodgepole pine in local areas by the lodgepole sawfly.

3. Local damage to pine foliage by the ponderosa pine needle miner.

## INTRODUCTION

The 1943 fall survey of the Klamath Indian Reservation and included private lands was conducted by R. C. Hall, C. E. Startt and R. S. Sorenson during the period of October 1 to October 6, 1943. The expenses of this survey were borne by the Klamath Indian Reservation.

The estimates of annual losses and infestation trends appearing in this report are based upon cruises of six 320-acre check plots located on the Reservation.

The estimates of virgin timber acreage and stand volume are from Bedard's Survey Report for 1941 and 1942 and have not been corrected for cutting which occurred in 1943.

## RESULTS OF THE SURVEY

### Losses in 1942

Insect-caused losses in 1942 were generally at a very low endemic level and were practically the same as for 1941. The heaviest losses for 1942 occurred in the Klamath Marsh Area with the Little Yamsey Plot No. 3 showing the maximum loss of about 100 board feet per acre or 0.8 percent of the stand (Table 1). The average per acre loss for all plots was about 50 board feet per acre or 0.33 percent of the stand. There was practically no grouping in the 1942 loss. Rather, it was characterized by scattered, mostly overmature trees in a generally advanced stage of decadence. As on the Deschutes National Forest the size of the average tree killed in 1942 was considerably larger than previous years and on the check plots averaged 1,100 board feet. The principal insect species involved in this loss was the western pine beetle, the California flatheaded borer and miscellaneous species of Ips.

Unit losses for the Reservation and included Long Bell timber lands are entered in Table 2. These show that there was approximately 27,000 trees containing 14,000,000 board feet killed on the Reservation or about 0.36 percent of the stand and approximately 2,000 trees containing 650,000 board feet or 0.15 percent of the stand on the Long Bell lands. The general picture of these losses during this year is that they are more than compensated for by normal growth.

The infestation trend appears to be at a static low level with 1941 and 1942 the lowest point since 1937, with indications for a slight increase in 1943.

The 1943 Infestation

Partial loss records for 1943 indicate that these losses will be considerably higher than for 1942, but should not be of sufficient magnitude to warrant any direct control in any of the units. The characteristics of the 1943 infestation are similar to that for 1942 except that the size of the average tree is slightly larger, containing approximately 1,300 board feet per tree. The increase in the average size of the infested tree is of considerable importance in that the value of the timber destroyed generally increases as the size of the tree increases and it means that the trees selected by the beetles are those of highest stumpage value.

## MISCELLANEOUS INSECTS

Insects other than bark beetles have caused considerable damage on the Klamath Indian Reservation. Among the more important of these are the Great Basin tent caterpillar, the lodgepole sawfly and the ponderosa pine needle miner.

### The Great Basin Tent Caterpillar (Malacosoma fragilis Stretch)

This insect has caused very serious damage to range plants, particularly bitter brush, throughout the Reservation during the 1943 season. It was found to be particularly abundant in the Taylor Butte Unit of the Klamath Marsh area where almost complete defoliation had occurred over large areas and where there had been recent high loss in bitter brush cover. If this loss in cover continues it will seriously affect the carrying capacity of much of this range.

### The Lodgepole Sawfly (Neodiprion sp.)

An outbreak of the lodgepole sawfly was first noted in the Beaver Marsh Area in the fall of 1941. In 1942 this outbreak increased in severity. Early in August, 1943, W. D. Bedard, together with Forest Supervisor Kephart, Mr. Patrie and Mr. Gailbraith, made an inspection of the lodgepole sawfly infestation and collected pupae. Bedard reported, at that time, that this infestation covered approximately a township. He also reported that this infested area had increased considerably over that of the previous season. He observed that open grown trees suffered the heaviest defoliation, often being completely stripped of all but the 1943 needles, while trees in groups were most heavily attacked in the tops. The larvae had all pupated at the time of his examination.

This area was examined by Hall, Startt and Sorenson on September 29 and October 6. At the time of the first examination, adults were very abundant and a number were collected for determination. At the time of the second examination it was snowing and no adults were observed. A large number of needles were examined on October 6, but no oviposition could be found.

Burke (1) reports the lodgepole sawfly (Neodiprion burkei Midd.) as having caused serious defoliation to lodgepole over large areas at West Yellowstone, Montana, in 1921 resulting in death to a large percentage of the defoliated trees. (Figure 1) The present outbreak appears to be this same species and is the first time this species has been found in Oregon. If this infestation on the Reservation continues at its present rate, it appears certain that a large number of these lodgepoles will be killed.

Control of this species is possible by the use of lead arsenate applied either as a liquid spray by a high powered spray rig or as a dust from an airplane, but under the conditions of the present outbreak it is doubtful if either of these methods would be economically justifiable. Burke (1) suggested that burning the litter at the time of pupation (September) would undoubtedly be effective but this method is fraught with many risks. It is recommended that this area be carefully checked in the spring and early summer to determine the status of this infestation and whether or not it is likely to be brought under control by natural factors before any further consideration be given to applying artificial control measures.

The Ponderosa Pine Needle Miner (Recurvaria moreonella Hein.)

Forest Supervisor Kephart reported an infestation of the ponderosa pine needle miner covering about two sections near Chiloquin. Damage appears to be spotty with some trees suffering more than others. Because of the inconspicuous nature of the injury it was difficult to assess the degree of damage to crown foliage from a ground examination.

(1) Burke, H. E. Two destructive defoliators of lodgepole pine in the Yellowstone National Park. U. S. Dept. Agric. Cir. 224, 20 pp., illus. 1932.

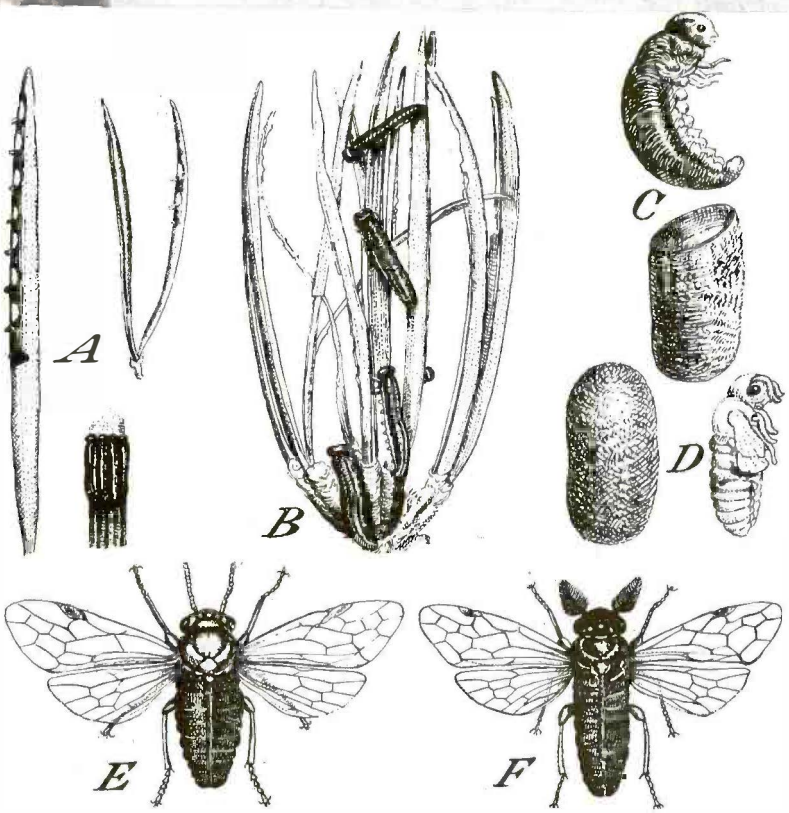


FIGURE 45.—Lodgepole sawfly (*Neodiprion burkei*): *A*, Egg pockets in needle and very young caterpillars feeding, × 1.5; *B*, larvae at work, natural size; *C*, hibernating prepupa, × 5; *D*, pupa, × 5; *E*, adult female, × 7; *F*, adult male, × 7.

Figure 1

Various stages of the lodgepole sawfly. The papery, capsule like, cocoons of this species are constructed in the litter and duff around the base of the infested trees. (From "Insect Enemies of Western Forests" by F. P. Keen [2])

(2) Keen, F. P. Insect Enemies of Western Forests. U.S.D.A. Misc. Publ. 273, pg. 90, illus. 1938.

Table 1. Pine timber killed by bark beetles on virgin check plots on the Klamath Indian Reservation and included private lands for 1942

| Area and Unit | CHECK PLOTS | | | GROSS 1942 LOSSES | | | | |
|---|---|---|---|---|---|---|---|---|
| | Plots | Acres | Volume (BM) | No. of trees | Total (BM) | BM per acre | Percent of stand | Ratio to 1941 |
| Klamath Marsh | | | | | | | | |
| Little Yamsey | # 3 Little Yamsey | 320 | 3,790,000 | 24 | 30,830 | 96 | .81 | 3.17 |
| Skellock | 5 Skellock | 320 | 4,460,000 | 14 | 16,280 | 51 | .37 | 1.20 |
| Taylor Butte | 8 Taylor | 320 | 3,440,000 | 13 | 11,580 | 36 | .34 | 3.02 |
| Total | 3 | 960 | 11,690,000 | 51 | 58,690 | 61 | .50 | 2.16 |
| Sprague River | | | | | | | | |
| N. Calimus | #13 Calimus | 320 | 7,710,000 | 14 | 15,850 | 50 | .21 | .67 |
| Fuego | 15 Fuego | 320 | 3,520,000 | 7 | 8,680 | 27 | .25 | .37 |
| Total | 2 | 640 | 11,230,000 | 21 | 24,530 | 39 | .22 | .53 |
| Sycan Marsh | | | | | | | | |
| Coyote Creek | #29 Long Creek | 320 | 3,500,000 | 7 | 4,640 | 15 | .13 | .28 |
| Grand Total | 6 | 1,920 | 26,420,000 | 79 | 87,360 | 46 | .33 | .97 |

Table 2. Insect-caused pine mortality. Klamath Indian Reservation and included private lands. Season of 1942.

| Area and Unit | PONDEROSA PINE TYPE Acreage: Virgin | Cut-over* | Total | Volume MBM | ESTIMATED 1942 LOSSES Trees: Total | Per section | Volume: Total (MBM) | BM per acre | percent of stand |
|---|---|---|---|---|---|---|---|---|---|
| BEAVER MARSH | | 39,700 | 39,700 | 90,000 | 1,500 | 24 | 350 | 9 | 0.39 |
| FORT KLAMATH | 3,330 | 15,630 | 18,960 | 66,000 | 900 | 30 | 160 | 8 | 0.25 |
| KLAMATH MARSH | | | | | | | | | |
| Ind. Res. | 122,200 | 128,300 | 250,500 | 1,696,775 | 14,580 | 37 | 9,610 | 38 | 0.56 |
| Long Bell | 1,470 | 29,730 | 31,200 | 89,000 | 1,340 | 27 | 345 | 11 | 0.39 |
| Total | 123,670 | 158,030 | 281,700 | 1,785,775 | 15,920 | 36 | 9,955 | 35 | 0.56 |
| SYCAN MARSH | | | | | | | | | |
| Ind. Res. | 42,360 | 20,680 | 63,040 | 581,900 | 1,700 | 17 | 540 | 9 | 0.10 |
| Long Bell | 30,220 | 7,260 | 37,480 | 355,050 | 900 | 15 | 300 | 8 | 0.08 |
| Total | 72,580 | 27,940 | 100,520 | 936,950 | 2,600 | 17 | 840 | 9 | 0.09 |
| SPRAGUE RIVER | 112,480 | 168,130 | 280,610 | 1,464,210 | 7,850 | 18 | 3,560 | 13 | 0.24 |
| TOTAL Ind. Res. | 280,370 | 372,440 | 652,810 | 3,898,885 | 26,530 | 26 | 14,220 | 22 | 0.36 |
| ALL Long Bell | 31,690 | 36,990 | 68,680 | 444,050 | 2,240 | 21 | 645 | 9 | 0.15 |
| AREAS | 312,060 | 409,430 | 721,490 | 4,342,935 | 28,770 | 26 | 14,865 | 21 | 0.34 |

* cut-over status as of 1942

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